

### Abstract

The present invention is a method of processing a digital image that is initially represented by digital data indexed to represent positions on a display. The digital data is indicative of an intensity value  $I_i(x,y)$  for each position  $(x,y)$  in each  $i$ -th spectral band. The intensity value for each position in each  $i$ -th spectral band is adjusted to generate an adjusted intensity value for each position in each  $i$ -th spectral band in accordance with

$$\sum_{n=1}^N W_n (\log I_i(x,y) - \log [I_i(x,y) * F_n(x,y)]), \quad i=1, \dots, S$$

where  $W_n$  is a weighting factor, "\*" is the convolution operator and  $S$  is the total number of unique spectral bands. For each  $n$ , the function  $F_n(x,y)$  is a unique surround function applied to each position  $(x,y)$  and  $N$  is the total number of unique surround functions. Each unique surround function is scaled to improve some aspect of the digital image, e.g., dynamic range compression, color constancy, and lightness rendition. The adjusted intensity value for each position in each  $i$ -th spectral band of the image is then filtered with a filter function to generate a filtered intensity value  $R_i(x,y)$ . To prevent graying of white zones in the image, the maximum of the original intensity value  $I_i(x,y)$  and filtered intensity value  $R_i(x,y)$  is selected for display.